

No. VIII.—On the 23d and 24th a slight depression moved from Dakota in a northeasterly direction to the north of Lake Superior; it only possessed features of little interest, and was rapidly followed by depression No. IX.; its track is not charted.

No. IX.—On the 23d and 24th the barometer was low in Oregon and British Columbia, and the wind directions show that this depression had advanced on the 25th into Montana and Dakota. On the 26th and 27th cold northwest winds blew in Dakota and Manitoba, while southerly winds prevailed from the Gulf to the Lake region. On the 28th this depression, whose charted track is confined to the Northwest, was filled up by air inflowing from the high areas to the north and south of it respectively. While it existed abundant rain fell in its eastern quadrant, where heavy thunder-storms were generally reported.

No. X.—On the 28th the barometer fell at the North Pacific coast stations. On the 29th this depression crossed the Rocky Mountains, and there was a rapid fall of the barometer in the Northwest, where the northerly winds that had been closing up the rear of depression No. IX shifted to warmer southerly. At 4:35 p. m. of the 30th, the lowest pressure was in Minnesota, and colder northwest winds had begun to blow in Manitoba. At 7:35 a. m. of the 31st, the lowest pressure extended in a trough from Lake Superior to Nebraska between the two areas of high barometer, one on the South Atlantic coast, and the other rapidly advancing with cold northerly winds from the British Possessions. At 11 p. m. the centre of lowest pressure had moved into the St. Lawrence valley near Montreal. Considerable rain fell in the south-east quadrant of this depression, but was rapidly followed by clearing weather, due to the cold dry air furnished by the northwest winds. Its track shows that the velocity of the centre of low barometer was much the greatest of any storm during the month. The further history of this low area will belong to the September Review.

TEMPERATURE OF THE AIR.

In General.—The general distribution of temperature for the month is shown by the isotherms on Chart No. II. A comparison with the averages for August, during the past seven years, shows that the temperatures have been from one to two degrees above the normal throughout the Gulf and Atlantic States, St. Lawrence valley, Lake region and Minnesota, but have been about normal in the Ohio, Mississippi and Missouri valleys. On the Pacific coast, the monthly mean for San Diego is six degrees below the average; at San Francisco it is about normal, and at Portland, Or., two degrees above.

Monthly mean temperatures, at special points, have been as follows: Mt. Washington, 48°.9.

Maximum and Minimum Temperatures.—Maximum temperatures, at Signal Service stations, above 95°, have been reported as follows: 96°, Savannah, New Orleans, Leavenworth, Salt Lake City; 97°, Augusta, Galveston; 98°, Montgomery, Fort Gibson, Fort Sill, Boise City, Winnemucca; 99°, Mobile, Vicksburg, Shreveport, Denver; 100°, Indianola, Jacksboro, Concho, Dodge City; 102°, Denison, North Platte; 103°, Corsicana, Red Bluff, Visalia; 104°, Brackettville; 108°, San Antonio; 112°, Yuma; 116°, Stanwix. From stations not included in Signal Service, *extreme temperatures* have also been reported as follows: 100° at Fort Rice, Dak., Independence, Iowa; 101° at Atlanta, Ga.; 102° at Baton Rouge, La., Chapechet, R. I., Gilmer, Clarksville and Melissa, Tex.; 103° at Fort McKavett, Tex.; 104° at New Ulm and Mesquite, Tex.; 105° at Fort Lyon, Col.; 108° at Fort McPherson, Neb., Fresno, Cal.

Minimum temperatures below 45°: 44°, Cheyenne, Marquette; 43°, Boise City; 41°, Breckenridge; 40°, Pembina; 36°, Winnemucca. It will be seen that all the minima occurred north of the 41st parallel of latitude, and excepting the one on Lake Superior, west of the 96th degree of longitude.

The maximum temperatures of the month occurred, in a general way, as follows: From the 1st to the 7th, in the Gulf States, Ind. Ter., Georgia, Tennessee, the Ohio valley and Lower Lake region; from the 17th to the 24th, in Minnesota, Lake region and New England; on the 28th and 29th, in New England and the Middle States, and on the 30th and 31st in the Missouri, central Mississippi and Ohio valleys and interior of the Southern States.

The minima occurred on the 2d and 3d, along the New England coast; on the 4th, 5th and 6th, over the Lake region, Middle States and New England; from the 15th to the 19th, in the Southern States and Ohio valley; from the 22d to the 26th, over the Western plains and Mississippi valley, and, on the 31st in northern New York and New England.

Ranges of Temperature.—The largest monthly and diurnal ranges have been respectively as follows: Winnemucca, monthly, 66°, diurnal, 48°; Boise City, 55°, 39°; North Platte, 51°, 41°; Denver, 52°, 45°; Visalia, 51°, 44°; Pembina, 49°, 38°; Breckenridge, 49°, 42°; Roseburg, 47°, 40°; Red Bluff, 47°, 39°; Salt Lake City, 47°, 25°; Cheyenne, 47°, 43°; North Platte, 47°, 33°; Yankton, 47°, 31°. The least monthly and diurnal ranges have been respectively: Key West, 17° and 16°; Cape Hatteras, 21°, 16°; Wood's Holl, 22°, 15°; Charleston, 22°, 17°; New Orleans, 23°, 16°; San Francisco, 23°, 19°; San Diego, 24°, 19°; Cape May, 24°, 17°; Cape Henry, 25°, 19°; Jacksonville, 25°, 20°. It is found, by comparison, that the monthly ranges exceed in general the diurnal by about ten degrees; that the least ranges occur,

without exception, at sea-coast stations, the most exposed stations having the least ranges; and that the greatest ranges occur at the more elevated stations, especially in the region north of the 40th parallel and west of the 96th meridian.

Frosts were observed as follows:—On the 6th, at Denver, Col.; 13th, at Logansport, Ind., and Cape May; 22nd and 23rd, at Fort Madison, Iowa; 26th, Camp Halleck, Nev., and Virginia City, Mon.; 27th, Bismarck, Dak.; 31st, Toledo, Ohio, and nightly at Halleck station (C. P. R. R.) Nev., and Summit, Col.

Ice.—The formation of ice, rather than frosts, was reported from Halleck station, Nev., nightly during latter part of month.

PRECIPITATION.

In General.—The general distribution of rain for the month is shown on Chart No. III. The table in the lower left-hand corner gives the precipitation, in the various districts, by which it will be seen that there has been quite a large deficiency in the Middle, South Atlantic and Gulf States, and in Minnesota, while a slight excess is reported in Tennessee and the Upper Lake region. It is a notable feature of the precipitation for this month, that the most of it has occurred during heavy showers of short duration and over quite limited areas, thus giving to certain districts an excess, at the expense of the surrounding country. Considerably over the average amount has fallen in Oregon, but with one exception of 0.03, no rain is reported in California.

Special heavy rains.—The following are the most notable cases of heavy rains that have been reported: 1st, Key West, 1.47; Cape Lookout, 3.85 inches; (1.50 in. in ten minutes.) 2nd, Goldsboro, N. C., (2nd and 3d) 2.00 in.; Weldon, N. C., 2.62 in.; Greenville, N. C., (2nd and 3d) 5.69 in. 3d, Dodge City, Kan., 2.42; Cape Lookout, 3.10 in. 6th, Denver, Col., 1.00 in 25 minutes; Charleston, 1.27; Keokuk, Iowa, 2.40; North Platte, Neb. 1.84. 7th, Portland, Me., 2.36; Ft. Gibson, Ind. Ter., 1.94; Ft. Sill, Ind. Ter., 1.21 in.; Goldsboro, N. C., 2.50 in. 8th, Augusta, Ga., 1.82; Memphis, Tenn., 2.78; Escanaba, Mich., 1.27 in. in 20 minutes; Rio Grande, Tex., 2.65 in.; Forsyth, Ga., 2.50 in., over 2 inches falling in 45 minutes; Brookhaven, Miss., 2.10 in. 9th, Portland, Me., 2.15; Wilmington, N. C., 2.84; Orono, Me., (9th and 10th) 2.30 in. 10th, Eastport, Me., 2.12 11th, North Platte, Neb., (in 30 minutes) 2.00. 12th, Cape May, N. J., 2.10; North Platte, Neb., 1.46. 13th, New Haven, Conn., 2.75. 14th, Newark, N. J., Alpena, Mich., 2.50; Tybee Island, 2.02. 15th, Portsmouth, N. C., 2.29; Freehold, N. J., 2.48 in. 16th, Mt. Washington, N. H., 2.90. 18th, Hartford, Conn., 3.45 inches; Tybee Island, 1.80. 19th, Tybee Island, 2.45. 20th, Oregon, Me., (20th and 21st) 3.45 in.; Emerson, Neb., 2.10 in.; Howard, Neb., 2.02 in.; Wolfeboro, N. H., 2.60 in.; Tabor, Iowa, 2.61 in. 21st, Corsicana, Tex., 2.01; Fort Gibson, Ind. Ter., 1.42; Denison, Tex., 1.16; Jacksboro, Tex., 2.01; Louisville, Ill., 2.00 in.; Beloit, Wis., 2.00 in. 22nd, (22nd and 23d, Nashville Tenn., 2.80; St. Marks, Fla., 3.95; Savannah, Ga., 1.92; Martinsville, Ill., 2.52 in.; Spiceland, Ind., 2.17 in. 23d, Wilmington, N. C., 3.51; Alpena, Mich., (23d and 24th) 4.57; Alpena, Mich., 3.36 in. (1.07 in. in 35 minutes;) Martinsville, Ill., 2.63 in. 24th, Trenton, N. J., 4.30 in. 25th, Albany, N. Y., 1.63; New London, Conn., 2.37; (25th and 26th;) Mt. Washington, (25th and 26th) 3.83; Portland, Me., (Ft. Preble) 25th and 26th, 2.20 in.; Arco, N. J., 2.68 in.; Lunenburg, Vt., (25th and 26th) 2.60 in.; Tabor, Iowa, 3.00 in.; Mystic, Conn., 4.00 in.; Somerset, Mass., 2.28 in.; Fall River, Mass., (25th and 26th) 2.60 in.; Springfield, Mo., 2.00 in., (in 20 minutes.) 26th, Newport, R. I., 1.97; Breckenridge, Minn., 1.53; Nora Springs, Iowa, (26th and 27th) 2.40 in. 27th, La Crosse, Wis., 2.55; Boonsboro, Iowa, (27th and 28th) 5.15 in. 28th, Dubuque, Iowa, 2.80; Ames, Iowa, (28th and 29th) 4.12 in.; Cleveland, Iowa, 2.60 in.; Geneva, Wis., 2.13 in.; Beloit, Wis., 4.00 in. 29th, Milwaukee, Wis., 1.63; Boonsboro, Iowa, 4.10 in. 30th, La Crosse, Wis., 1.69; St. Paul, Minn., 1.83. 31st, Norfolk, Va., 1.75; Cleveland, Ohio, 2.59; Detroit, Mich., 2.02; Erie, Pa., 1.11; Port Huron, Mich., 1.22; Sandusky, Ohio, 2.80; Toledo, Ohio, 1.74; Martinsville, Ill., 2.75 in.; Painesville, Ohio, 2.80 in.; Hudson, Ohio, 3.40 in.; Venice, Ohio, 2.10 in.; Cleveland, Ohio, 2.07; Manitowoc, Wis., 2.19 in.

Small Monthly Rain-falls.—The following stations report small rainfalls: In California; San Francisco, Sacramento, Visalia, Los Angeles and San Diego report no rain-fall; Red Bluff, 0.03; in Arizona; Yuma, 0.06; Stanwix, 0.13; in Nevada, Winnemucca, 0.00; Pioche, 1.18; Salt Lake City, Utah, 0.28; Roseburg, Oregon, 0.25; Boise City, Idaho, 0.09; in Texas; Stockton, 0.37; Eagle Pass, 0.35; Edinburg, 0.11; Fredericksburg, 0.19; Castroville, 0.00; Shreveport, La., 0.20; in the Middle States, Baltimore, 0.64; Philadelphia, 0.66; in the Province of Ontario, Can., Port Stanley, 0.96; Toronto, 0.12, and Kingston, 0.47.

Large Monthly Rainfalls.—Rainfalls of seven inches or more are reported, as follows: Mount Washington, 11.11; in Florida; Daytona, 10.77; Punta Rasa, 8.33; St. Marks, 7.90, and St. Augustine, 7.05; North Carolina; Wilmington, 10.46; Greenville, 9.10; Brookhaven, Miss., 8.15; Boonsboro, Iowa, 10.00; Martinsville, Ill., 7.84; in Michigan; Alpena, 7.90; Detroit, 7.23; Fort Wayne, 7.65; in Maine, Portland, 7.90; Cornish, 7.45, and Chatham, N. B., 7.48.